who are practised upon, and it is to be hoped that this view may now prevail. Twenty-seven of our states already have laws that close the profession of dentistry to men not properly fitted for it, so that Massachusetts has become, as it were, an asylum for the unskilled, and is already flooded with them, thereby working great hardship on the educated and capable members of the profession. Good reasons against such regulation as the Massachusetts legislature is now considering, are difficult to discover.

In the same line as this, but in a less advanced stage, is a move in Pennsylvania to allow the prescription of spectacles only to properly instructed oculists, and withhold it from opticians, whose duties end with supplying the glasses that have been prescribed. We could adduce here the same arguments that uphold the propriety of permitting none but physicians to prescribe medicines, while druggists may compound the medicines thus prescribed; while the objections to the proposition would come only from those who accept the not uncommon impression, encouraged by most opticians, that the choice of suitable glasses is not a difficult matter. This is true enough in many simple cases; but every oculist can quote examples of harmful effects following the use of lenses not adapted to the needs of the eyes. Few opticians have more than a mechanical training in their art, while the oculist should be a specialized physician. He and his patients deserve the same protection that is extended to other doctors and theirs.

BY THE WILL of the late Uriah A. Boyden, property, the present value of which exceeds two hundred and thirty thousand dollars, was left in trust for the purpose of astronomical research "at such an elevation as to be free, so far as practicable, from the impediments to accurate observations which occur in the observatories now existing, owing to atmospheric influences." The trustees of this fund have transferred the property to the President and fellows of Harvard college, in order that the researches proposed by Mr. Boyden may be directed at the Harvard college observatory. These researches will be supported by a portion of the means of the observatory, in addition to the trust-fund itself. The establishment and general management of the proposed mountain observatory will form a part of the work done at Cambridge, where also the observations made at the new station will in general be reduced and prepared for publication.

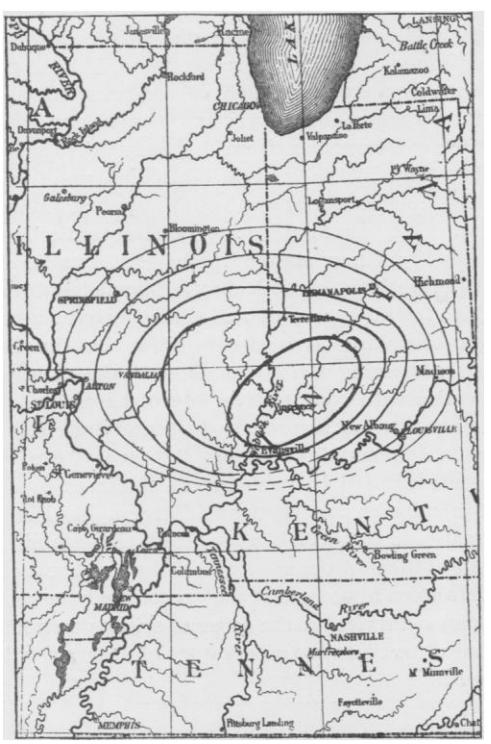
This donation opens a new field to astronomical activity. Heretofore the establishment of observatories has depended upon local or personal influences, which have usually confined them to the neighborhood of large cities, obviously not the best situation for astronomical work. The new observatory can be placed in what may appear, after sufficient inquiry and experiment, to be the best attainable location. Many obvious reasons suggest the selection of some place in the southern hemisphere. The southern heavens are still comparatively unknown, much as has been effected during the present century by the southern expeditions of astronomers from Europe and the United States, and by the gradual establishment of permanent observatories south of the equator. Moreover, if the present observatory of Harvard college is aided by a new station in the southern hemisphere, a scheme of work may be planned at Cambridge for the survey of the entire heavens upon a uniform plan. It is also probable that the stations combining the advantages of the greatest elevation with comparative ease of access and a climate not too severe may be found upon some southern mountains. Before the project can be executed, it will be necessary to obtain as much information as possible upon all geographical and climatic topics which may affect the establishment of the new observatory. All who have such information at command will accordingly be rendering a service to the cause of science by communicating it to the observatory of Harvard college.

THE INDIANA EARTHQUAKE.

THE U. S. geological survey has received information from about seventy towns within, and adjacent to, the area shaken by the earthquake of Feb. 6, 1887, in Indiana and Illinois. The accompanying map shows the derived isoseismal lines numbers 2 to 6 on the Rossi-Forel scale of intensity. The survey is greatly indebted to Prof. T. C. Mendenhall of Terre Haute for his courtesy in distributing printed letters of inquiry, and it is mainly from the replies to these letters that the data have been obtained. The only exact time-observation also was made by him with a seismoscope connected with a clock. The time he gives was $4^h\ 15^m\ 6^s$ reduced to the 90th meridian

The disturbed area embraces about 35,000 square miles, and is elliptical in shape, the major axis lying nearly east and west. It is limited to the southward by the valley of the Ohio, and was but slightly felt south of the river. The reported directions of movement are, as usual, very inconsistent and of little value. It is generally reported that two distinct shocks were felt, each of a few seconds' duration, and with a small but very noticeable interval between them. A low rumbling was also generally observed as preceding and accompanying the shocks.

With the exception of Professor Mendenhall's



THE INDIANA EARTHQUAKE.

observation, the times given are not accurate enough to be of much utility. Coseismal lines, therefore, cannot be obtained for this earthquake. The speed with which a shock travels is so great, and the area and distances, relatively speaking, are so small, that it would require numerous time-determinations of very great precision to warrant any attempt to fix the coseismals.

Mr. Everett Hayden has 'weighed' the intensities, and has plotted, with his usual care and intelligence, the isoseismals herewith given. The closed curves are neither symmetric nor co-axial, and this seems to be certainly attributable, not to uncertainties of the reports alone, but to real asymmetry in the distribution of the force of the shocks, and to a real shifting of the axes of the figures as the elastic waves of energy spread out. It is not easy to make any comparison between this earthquake and others which from time to time occur in the valley of the Ohio, for it is the only case since the New Madrid earthquakes of 1811–12 when definite data in sufficient quantity have been gathered which would serve as the basis of such an estimate. In a general way, it may be said, however, that the intensity of the disturbance in the central portions was, on the whole, about equal to that exerted in the southern portion of Ohio, central Tennessee, and Kentucky by the Charleston earthquake of Aug. 31, 1886.

CIRCULATION OF THE SEA THROUGH NEW YORK HARBOR.

Two derivations of the tide enter New York harbor, one by way of Long Island Sound, the other by way of Sandy Hook Bar. The one that traverses the sound is much obstructed and 'crowded,' so that it arrives upon the scene four hours behind the other, and much augmented in 'range.'

These two tides meet, or pass into each other, at Hell Gate, and give to the city portion of the East River a composite 'rise-and-fall' and a peculiarly local system of tidal currents. The general scheme of this meeting and composition is to be found in the annual report of the coast survey for 1867, much as I should give it to-day, so I will not enter upon it here, but offer the accompanying diagram as the types of the tidal profiles.

The two figures are serpentine curves whose elements are those of the tides given in the tables of published charts for the two entrances to New York. From this diagram we observe that about three lunar hours after the moon's transit, the surface of the sound is at the same elevation as the sea at Sandy Hook. Later, they differ, and more and more widely, till at the sixth hour a maximum difference of height is reached, which exceeds five feet. Then a decline takes place, till at the ninth hour the sound and Sandy Hook Bay are again upon the same level. After this a slope in the opposite sense develops, reaching a maximum about the time of the next transit. The first slope, that between three hours and nine, is towards the sound, i.e., the sound continues through this interval to be lower than the harbor. The second slope is towards the harbor, and one may remember it easily as that which reaches its maximum at the 'southing of the moon,' and creates the 'ebb-current,' so called.